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# NOTES OF A CASE OF MILLSTONE-MAKERS PHTHISIS, SILICEOUS MATTER FOUND IN THE LUNGS.

BY DR. PEACOCK.

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In the *British and Foreign Medical Review* for January 1860, Dr. Peacock drew attention to the great liability to pulmonary disease in the men employed in manufacturing millstones from a siliceous stone known as the French burr. The following case, which occurred in St. Thomas's Hospital during the summer of 1860, affords an example of the form of disease to which these workmen are liable, and is further particularly interesting from the circumstance that considerable quantities of siliceous material were detected in the lungs on chemical and microscopical examination.

R. J., æt 48, a French millstone-maker or builder, was admitted into St. Thomas's Hospital on the 3rd of August, 1860. He had been previously an out-patient under Dr. Peacock, and stated that he had been suffering more particularly since the previous October, but had had cough, expectoration and difficulty of breathing, especially during winter, for three years. The following are the notes of the case. He served his apprenticeship to the milling business, but about ten years ago commenced to work at the millstone-making, and has continued to do so ever since. He considers himself to have been regular in his habits, having only taken two or three pints of beer daily and occasionally spirits. His illness commenced with cold, and he has since got gradually worse, suffering however much more seriously during winter. He has spat blood occasionally but only in streaks, and never before the last year.

He complains of cough and expectoration, and the sputum is copious, massive, muco-purulent, viscid, and of a dark colour; sometimes almost black. He has considerable difficulty in breathing, has lost much flesh, and is thin and old-looking for his age. His appetite and digestion

are defective, the bowels are regular, and he has night perspirations. His pulse is very feeble but not materially accelerated.

The resonance on percussion is defective in all parts of the chest, and the movements are very imperfectly performed. The deficiency is most marked at the apices, and there is sibilant and sonorous rhonchus in all parts, but especially at the upper portions.

On admission, a mustard poultice was applied to the chest, and he had an expectorant and anodyne mixture, and anodyne pills at night, with the mixed diet. On the 6th, two drachms of the ol. Morrhuæ were prescribed with the cinchona and acid mixture, and on the 13th he was directed to take a draught of ether and ammonia at intervals, and to have a glass and a-half of brandy, increased on the 23rd, to two glasses. He, however, gradually became weaker, suffered from diarrhœa, and died on the 30th.

From the difficulty of obtaining the consent of the friends of the patient, the *post-mortem* examination did not take place till the 1st of September, fully fifty hours after death, and the body was consequently much altered by decomposition.

The lungs were firmly adherent to the parietes, especially at the upper parts of the chest, where there were very thick and firm attachments. Both lungs were throughout sparingly crepitant, and at the apices were much contracted, solid, and of a dark colour—no tubercles were found in any part, but there were numerous hard, black, gritty masses, about the size of a split-pea, embedded in the tissue, more particularly at the apices and at the right side. The inferior part of the left lung was in the state of pneumonic condensation, passing into suppuration.

The larynx and trachea were dilated, and the mucous membrane was throughout thickened, but free from ulceration. The follicles on the under surface of the epiglottis were enlarged. The bronchial mucous membrane was much reddened, probably partly the result of imbibition from decomposition, but there was not any material increase of secretion, except in the smaller tubes. These were also throughout dilated. The bronchial glands were very large, dark coloured and solid, but not tuberculous.

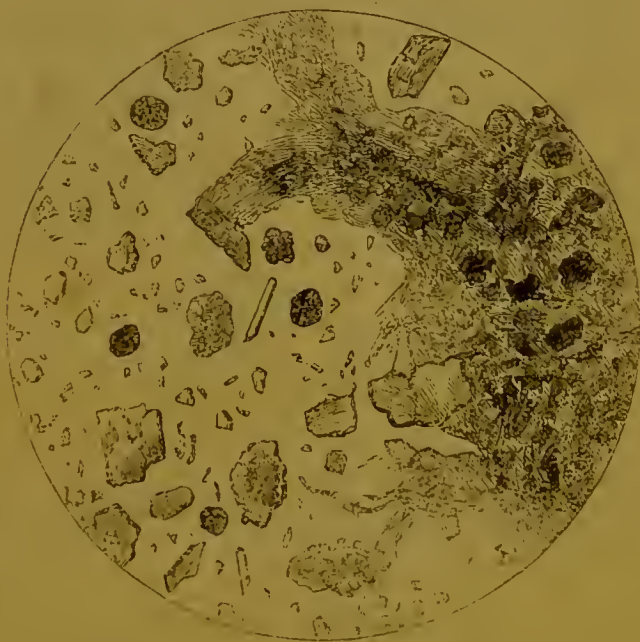
The heart was considerably enlarged and its cavities dilated, especially the right auricle and ventricle, but the walls were not hypertrophied, and the right ventricle had some fat on its surface. The muscular substance was very flaccid, and the inner surfaces of the cavities and of the aorta were deeply dyed from decomposition.

The liver, spleen and intestines were free from disease. The kidneys

were large, flaccid and congested, but did not apparently contain deposit.

Portions of the hard, gritty matter from the apex of the right lung were picked out, placed in the flame of a spirit-lamp till they were reduced to a white ash, and then boiled repeatedly in nitric acid. The residue, which was considerable in quantity, was then placed under a microscope. It proved to consist of sharp, angular, granular matter, which, except as to its greater fineness, bore a close resemblance to the dust collected in the workshops in which the millstones are prepared.

WOODCUT 1.



Represents a portion of the lung teased out with needles. The pulmonary tissues are seen to be obscured by excess of adherent carbonaceous material. Magnified 200 diameters.

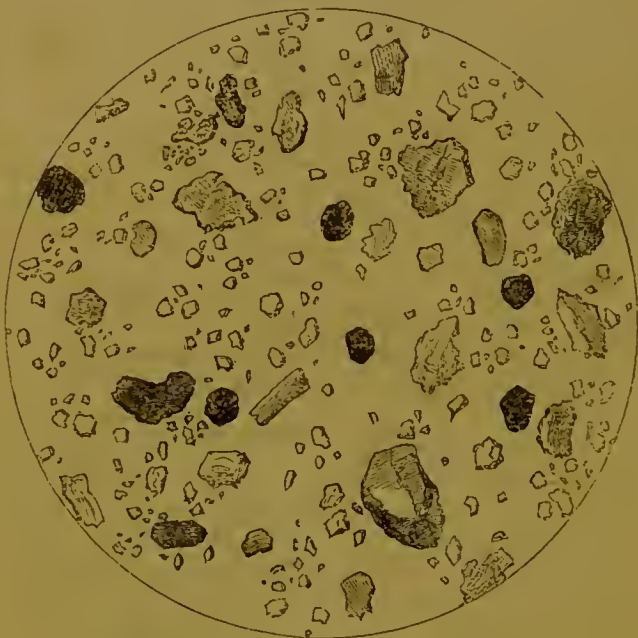
The microscopical drawings and preparations, exhibited to the Society, were made by Mr. Tuffin West, and displayed:—

1. The lung tissue teased out in water so as to show particles of mineral matter contained in the tissue;
- 2 and 3. The same in glycerine and Canada balsam;
4. The gritty matter, after maceration of the tissue in nitric acid for some hours; and
5. The dust from the workshops.

The figures published in the "Transactions" exhibit the microscopic appearance of the first and fourth of these preparations.

Dr. Peacock remarked, that in applying the term phthisis to this form of disease, he used it in a wider sense than that in which it was

WOODCUT 2.



Represents siliceous and some carbonaceous particles from the lung, after twenty-four hours action of cold nitric acid. Magnified 200 diameters.

ordinarily employed. He believed that when a person, predisposed to tubercular disease, was brought up from early life to the millstone-making, the irritation caused by the inhalation of the gritty particles might excite true tubercular phthisis, as in the case of S. S., described in his former paper in the *British and Foreign Medical Review*. But that when there was no special tuberculous predisposition, the irritation would give rise to chronic bronchitis and pneumonia—the condition often described as broncho-pneumonia—in which the lung would become consolidated, and might ultimately undergo ulceration with the production of cavities, but without any deposit of true tubercle. This had occurred in the instance now related, and in the case of J. C., described in his former paper. In these respects, the disease was very similar to that excited by the occupation of dry-grinding in the Sheffield



cutlery-workers. Dr. Peacock has shown that the men employed in the French millstone-making rarely live beyond the age of 40, and his recent experience is confirmatory of the same fact; but, while he ascribes much to the inhalation of the gritty particles, he regards the unhealthiness of the occupation as greatly aggravated by other unfavourable hygienic influences, especially the habits of intemperance in the men and the defective condition of their workshops. He believes, that provided the men did not commence to work at the manufacture till after they had attained their full growth, they would suffer much less; but in the present instance, the patient was fully 28 years of age before he entered upon the work, and had not been very intemperate, yet his age at death scarcely exceeded that of the men who are apprenticed to the trade. The longevity of the millstone-makers differs very greatly from that of the men employed by the same manufacturers in wire-weaving, &c., the latter attaining apparently the full duration of human life, though, so far as the workshops are concerned, they are placed in less favourable sanitary conditions.

Dr. PEACOCK, *16th of November, 1860.*







